LOW PRIORITY

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ChemRisk Document No. 2431

Carbide and Carbon Chemicals Corporation
Oak Ridge, Tennessee Plant WCX

Summary

Part A

POWER HOUSE

No. 1 boiler, which was taken out of service for inspection and overhaul on April 28, was worked on continuously during the week. The hydrostatic test uncovered several minor tube leaks and one leaky forged return bend in a superheater element. General condition of the boiler drums, tubes and furnace was considered good. Aside from the replacement of rolls, bull rings and exhauster blading, all three mills showed considerable pitting of the main driving ring gear. This wear was considered by the Combustion representative as being normal. Considerably more life can be counted on after realignment. All four 2300-volt motors driving fans will have to be rewedged. Two of these have been completed. The centrifugal relays, upon which the boiler auxiliary interlock system depends, are being replaced by a more rugged and simple type of device to insure permanence of trip settings.

PROCESS

Status of Process Buildings as of 8 a.m. May 7, 1945:

	Case I								Case II											Case III							
Sec.	2a					-2			2b										+3	1					-1		
Bldg	302					310			303										311	301					309		
Cell	1	2	3	4	5	1	2	3	1	2	3	4	5	6	7	8	9	10	1	1	2	3	4	5	1	2	3
1	e				h				e	g					b	a	a	e	e	g	g	g	g	g	e	e	g
2					e	e			b	g				d	e	a	a	e	e	g	g	g	g	g	e	e	g
3									b	g					b	d	a	e	d	g	g	g	g	g	e	e	g
4									b	g				d	e	a	a	e	e	g	g	g	g	g	e	e	g
5									b	g			d	d	b	a	e	e	b	g	g	g	g	g	e	e	g
6									b	g					e	a	a	e	b	g	g	g	g	g	e	e	g
7									b	g				d	e	a	a	e	d	g	g	g	g				
8									e	g					e	a	a	e	d	g	g	g	g				
9			d						b	g	d				b				b								
10			d						b	g	d				e				e								

Legend:

- C-616 cascade
- a C-216
- b G-74
- e Intersectional cell
- d Down for repairs
- e Vacuum testing or instrument checking
- f C-716 cascade
- g Under construction

Case I and II Cascade: Cell Summary	Case I	Case II	Case III
Cells in cascade with C-616	64	32	0
Cells being purged in preparation for C-616 charging	0	14	0
Cells running evacuated	1	0	0
Cells running on G-74	0	15	0
Cells down for repairs or seal replacements	2	11	0
Cells in hands of Vacuum Testing Department	0	17	12
Cells in hands of Instrument Department	0	2	0

PROCESS (Cont'd)

Cell Summary (Cont'd)

Case I and II Cascade: Cell Summary	Case I	Case II	Case III
Cells under construction	0	10	8
Cells in which acceptance runs have been completed	0	0	32
	67	101	52

There were 96 cells running in cascade at 8 a.m. May 7, 1945 compared to 84 cells in cascade at 8 a.m. April 30, 1945. As indicated by the above chart, there are many cells in Case II buildings that are practically ready for cascade operation.

There has been a sharp increase in the number of Allis-Chalmers pumps which have rubbed or failed when put into operation on C-616 but had operated satisfactorily on G-74. It is believed that the main cause of these pump failures is the lack of sufficient end clearance.

Vacuum testing was started in two Case III buildings during the week.

LABORATORY

A plant photographer has been approved and arrangements are being made to give rapid service with 24-hour coverage through the metallurgical section in any photography of equipment which may be needed for a permanent record.

New high marks were reached in sample production in the Control Laboratory, 625 samples having been reported from the counting laboratory and 381 by the mass spectrometer. The average time of analysis on rush samples was 2.4 hours by the counting method and 3.1 by spectrometry. A comparison of results obtained by remeasuring samples on different mass spectrometers showed that the probable error of measurement by this method is 1.9% as compared with 0.23% by the counting method. However, the counting results now being reported still require the application of systematic correction for counting losses on the samples of higher activity now being turned out by the plant. This correction on typical samples now coming from the top of the plant will raise the counting results by about 4%. This will eliminate most of the discrepancies between the two methods which has become apparent in recent weeks.

After careful investigation, it was concluded that the contamination produced on objects in contact with the radium-beryllium neutron sources was caused not by a leak in any of the sources, but by a very slight contamination of the outside of the containers with radium. The amount involved was only of the order of 10^{-9} grams and could easily have been introduced by handling and shipping of the containers subsequent to their preparation. The sources have now been installed in the fission counting apparatus and preliminary measurements are under way.

CONDITIONING

At 12:01 a.m. May 1, 1945 all the operations in the Conditioning Building were transferred from the supervision of Ford, Bacon and Davis, Incorporated to Carbide and Carbon Chemicals Corporation, as the contract of the former was completed at that time.

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Technical Information Officer Date
Oak Ridge K-25 Site

Carbide and Carbon Chemicals Corporation
Oak Ridge, Tennessee Plant WCX

Summary

Part A

POWER HOUSE

The total K-25 Area load increased 7% over last week to reach an average demand of 104,000 kw, due to the increased demand of the K-25 Process variable frequency load, which averaged 57,000 kw. With all three boilers in service it was possible to make more steam available to S-50, whose demand reached 1,200,000 lb/hr by the middle of the week.

PROCESS

Status of Process Buildings as of 8 a.m. May 21, 1945:

	Case I								Case II											Case III							
Sec.	2a					-2			2b										-3	1					-1		
Bldg.	302					310			305										311	301					309		
Cell	1	2	3	4	5	1	2	3	1	2	3	4	5	6	7	8	9	10	1	1	2	3	4	5	1	2	3
1	C								C	g					d			d	C	●	●	●	●	●	b	b	b
2					C	C				g					●			c		●	●	●	●	c	d	b	b
3									a	g								b		●	●	●	●	●	b	d	b
4									a	g								●		●	●	●	●	●	b	b	d
5										g						d		d		●	●	●	●	●	b	b	●
6										g								●		●	●	●	●	●	●	b	b
7			d							g								●		●	●	●	●				
8										g					d			b		●	●	●	●				
9										g				●													
10			d							g																	

Legend:

C-616 cascade	C Intersectional cell	f Acceptance runs completed
a C-816	d Down for repairs	g Under construction
b C-74	e Vacuum testing or instrument checking	h C-616 isolated
		0 running evacuated

Cases I, II and III Cascade / Cell Summary	Case I	Case II	Case III
Cells in cascade with C-616	5	77	0
Cells being conditioned	0	2	0
Cells down for repairs	2	5	3
Cells running on C-74	[illegible]	[illegible]	10
Cells in the hands of Vacuum Testing Department	0	4	38
Cells under construction	0	10	0
Cells in the hands of Instrument Department	0	1	1

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The total number of cells on stream at the end of the week was increased to 142 compared to 117 at the beginning of the week.

Facilities were installed in Building 305-9 to remove product from the Line Recorder stations. The installation greatly simplifies this procedure, and at the same time makes it a much safer operation.

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PROCESS (Continued)

Rapid progress is being made in the Case III buildings, and several of them should be on stream during the coming week.

LABORATORY

Analysis of the plant product has been brought up to date, and the results on all lots shipped out to date have been reported. Work is beginning on the chemical analysis of waste from the bottom of the plant and on material received from S-50 to be used for feed.

Four different types of barrier material have been successfully mounted for metallographic examination. This technique will make it possible to examine tube failures whenever it becomes necessary.

A study has been instituted of corrosion of steel pipe in water containing dissolved air. Tests will be made with various corrosion inhibitors in order to determine how best to cut down corrosion in the coolant coolers.

The capacity of the Control Laboratory for isotopic analyses of plant samples continues to increase, 747 samples having been reported by the counting method and 416 by the mass spectrometers.

INDUSTRIAL RELATIONS

During the week 622 people were hired and 310 were terminated. The net gain of 312 increased the total number on the pay roll at the end of the week to 11,402.

A review is being made of all outstanding requisitions, and all new requisitions are being carefully surveyed to attempt to level off employment to about the present number on the pay roll.

H. D. Kinsey
General Superintendent

LOW PRIORITY

ChemRisk/Shonka Research Associates, Inc., Document Request Form

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J. Lamb / 1034A

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Carbide and Carbon Chemicals Corporation
Oak Ridge, Tennessee Plant WCX

Summary

Part A

POWER HOUSE

The total K-25 Area load increased approximately 6% over last week, to reach an average demand of 110,000 kw. The variable frequency load averaged 61,900 kw. All three boilers have been in service supplying steam to S-50 with an average of 1,200,000 lb/hr.

PROCESS

Status of Process Buildings as of 8 a.m. May 28, 1945:

	Case I								Case II											Case III							
Sec.	2a					-2			2b										+3	1					-1		
Bldg.	302					310			303										311	301					309		
Cell	1	2	3	4	5	1	2	3	1	2	3	4	5	6	7	8	9	10	1	1	2	3	4	5	1	2	3
1	c					c			c	g								h	c	c	e	e	e	●			c
2					c	c				g					d			c		b	●	●	●	c			c
3										g								h		a	●	●	●	●			c
4							b			g								h		b	●	●	●	●	c	d	
5								d		g							d	●		c	●	●	●	●			
6										g	d							●		b	●	e	●	●	d	c	
7			●							g								h		b	●	●	●				
8										g										[illegible]	●	●	●				
9										g					c												
10			●							g																	

	Case IV																	Case V									
Sec.	3a					3b												4									
Bldg.	304					305												306							312		
Cell	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	1	2	3
1	c	●	g	g	g	c	g	f	g	g	g	g	g	g	g	g	g	c	g	g	g	g	g	g	g	g	g
2	●	●	g	g	c	g	g	f	g	g	g	g	g	g	g	g	c	g	g	g	g	g	g	g	g	g	g
3	●	●	g	g	g	g	g	f	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g
4	●	●	g	g	g	g	g	f	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g
5	●	●	g	g	g	g	g	f	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g			
6	●	●	g	g	g	g	g	f	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g			
7	●	●	g	g	g	g	g	f	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g			
8	●	●	g	g	g	g	g	f	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g			
9	●	●	g	g	g	g	g	f	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g			
10	●	●	g	g	g	g	g	f	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g			
11																		g	g	g	g	g	g	g			
12																		g	g	g	g	g	g	g			
13																		g	g	g	g	g	g	g			
14																		g	g	g	g	g	g	g			

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SECRET

PROCESS (Cont'd)

Status of Process Buildings (Cont'd)

Legend:

	C-616 Cascade	C Intersectional cell	f Acceptance runs complete
a	C-216	d Down for repairs	g Under construction
b	G-74	e Vacuum testing or instrument checking	h C-616 isolated
			G Evacuated

Condition	Case I	Case II	Case III	Case IV
Cells in cascade with C-616	63	78	11	0
Cells on inverse recycle - C-616	0	5	0	0
Cells being purged for C-616 charging	0	1	7	0
Cells being conditioned	0	1	0	0
Cells running evacuated	0	0	2	0
Cells running on G-74	1	0	0	0
Cells in hands of Vacuum Testing Department	2	2	29	19
Cells down for repair	0	4	3	0
Cells in which acceptance runs are complete	0	0	0	10
Cells in hands of construction	0	10	0	137

At the end of the week 152 cells were running in cascade, indicating an increase of 10 over the same time the previous week.

A major disturbance occurred in the cascade on May 23, when a large leak developed in an expansion joint in Cell 5 of Building 310-3. Due to various complications the leak was not discovered promptly, which resulted in sufficient inert gas leaking into the system to fill about seven buildings. About forty hours were required to remove all the inert gas and to establish the same conditions which existed prior to the break. The experience gained in this incident will be valuable in reducing the magnitude of such failures in the future. It developed that the mixing of the material in the cascade was much less than had been anticipated for such occurrence, so that the recovery time was much shorter than expected. Steps have been taken to educate the personnel to diagnose leaks so that they can be isolated quickly.

All three of the 309 buildings were put on stream during the week. It is expected that 303-10 and most of the 301 buildings will be placed in operation during the coming week.

LABORATORY

Isotopic analyses of plant material by the alpha counting method were temporarily abandoned at the end of the week, when the results calculated from these measurements by the simple 1-3 ratio applicable to operations under total reflux were conclusively shown by comparison to fission counting and mass spectrometer measurements to be veering more and more widely from the true value as additional plant units are placed in operation. This result has long been expected for the alpha counting method, since it is essentially an indirect measurement, and the only surprising feature is that the simple theory held as accurately as it did through Case I operation. Meantime, the fission counting method was in readiness to take over the burden of routine analyses, and plans are under way to calibrate the alpha counting method in terms of the fission counting results.

INDUSTRIAL RELATIONS

The number of employees on the pay roll increased from 11,402 at the start of the week to 11,700. There were 607 new hires and 309 terminations. Of the 309 terminations 135 were discharged for unsatisfactory workmanship and other reasons.

Recent changes in the selective service act will make it increasingly difficult to obtain deferments on men under 30 years of age. Deferments of men over 30 years of age will be easier as a result of these same changes.

Housing of employees continues to be the outstanding problem in connection with the maintenance of a satisfactory working force at this plant. In the past year our rate of turnover has been approximately 3.7% in permanent housing, 13.5% in demountable housing, 49.2% in dormitories, 57.8% in trailers, and 277% in hutments. The waiting list for housing is now made up of 1326 people. All of the plants inefficiencies which result from excessive turnover will continue until satisfactory and adequate housing is made available to our employees.

H. D. Kinsey
General Superintendent

LOW PRIORITY

ChemRisk/Shonka Research Associates, Inc., Document Request Form

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J Lamb / 1034A

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KZ-1917

Carbide and Carbon Chemicals Corporation
Oak Ridge, Tennessee Plant KCX

Summary

Part A

KZ 5408 PTA 4 A

KZ 5408 PTA 4 A

POWER HOUSE

The total K-25 Area load increased approximately 15% over last week, to reach an average demand of 127,000 kw. The K-25 process variable frequency load averaged 74,300 kw. All three boilers have been in service supplying steam to S-50 with an average of 1,250,000 lb/hr. Due to the increased variable frequency load it became necessary to split the variable frequency ring bus with Units 1, 3, 5 and 10 on one section and Units 4, 6 and 9 on the other section.

PROCESS

Status of Process Buildings as of 8 a.m. June 4, 1945:

	Case I								Case II											Case III							
Sec.	2a					-2			2b										+3	1					-1		
Bldg.	302					310			303										311	301					309		
Cell	1	2	3	4	5	1	2	3	1	2	3	4	5	6	7	8	9	10	1	1	2	3	4	5	1	2	3
1	C								C	g	h		d						C		a			●			C
2					C	C				g	h							C			a			C			C
3										g	h										a	●		●			C
4										●	h						d				a	d		●			
5										g	h						d				a	d		●			
6										g	O										a			●	●		
7			●							g	h																
8										g	h					a											
9										g	●	●															
10			●							g	h																

	Case IV																	Case V									
Sec.	3a					3b												4									
Bldg.	304					305												306							312		
Cell	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	1	2	3
1	C	●	g	g	g	C	●	●	●	g	g	g	g	g	g	g	g	C	g	g	g	g	g	g	g	g	g
2	●	●	g	g	C	●	●	●	●	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g
3	●	●	g	g	g	●	●	●	●	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g
4	●	●	g	g	g	●	●	●	●	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g
5	●	●	g	g	g	●	●	●	●	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g			
6	●	●	g	g	g	●	●	●	●	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g			
7	●	●	g	g	g	●	●	●	●	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g			
8	●	●	g	g	g	●	●	●	●	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g			
9	●	●	g	g	g	●	●	●	●	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g			
10	●	●	g	g	g	●	●	●	●	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g			
11																		g	g	g	g	g	g	g			
12																		g	g	g	g	g	g	g			
13																		g	g	g	g	g	g	g			
14																		g	g	g	g	g	g	g			

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SECRET

PROCESS (Cont'd)

Status of Process Buildings (Cont'd)

Legend:

	C-616 cascade	C	Intersectional Cell	f	Acceptance runs complete
a	C-216	d	Down for repairs	g	Under construction
b	C-74	e	Vacuum testing or instrument checking	h	C-616 isolated
				o	Evacuated

Conditions	Case I	Case II	Case III	Case IV
Cells in cascade with C-616	65	75	34	0
Cells running on inverse recycle - C-616	0	3	0	0
Cells running on inverse recycle - C-74	0	5	0	0
Cells being conditioned	0	1	0	0
Cells running evacuated	0	1	0	0
Cells down for repairs	0	3	3	0
Cells in hands of Instrument Department	0	0	3	0
Cells in hands of Vacuum Testing Department	2	4	4	58
Cells under construction	0	9	0	108

A total of 174 cells was running at the end of the week, indicating an increase of 22 over the previous week. Most of the additional cells were in Case III buildings.

At the end of the week all Case III buildings, except 301-2 and 301-5, were running in cascade. As indicated by the above chart, these buildings will be available shortly.

There were many interruptions in the bottom four buildings in the cascade due to water difficulties. Valves and strainers plugged frequently with deposits of asphaltic lining which entered the buildings from the main water header. Twin strainers are being installed where conditions permit, which should tend to reduce the lost time due to this difficulty.

The only other major interruption occurred on June 2 when a large volume of wet air entered the system when a line was cut in Building 303-3. The building was isolated from the cascade and the inert gas was purged with much less interruption than had been anticipated from such an occurrence. There was no apparent evidence of plugging due to the admission of this wet air into the system. Pressures were reduced throughout the cascade in order to lower the inventory to a minimum so that the equilibrium time would be reduced in reaching higher concentration.

With the exception of the above instances, the system is operating on the anticipated schedule.

The Vacuum Testing Division has been able to maintain its schedule so that buildings have been tested as rapidly as they have been available from construction.

LABORATORY

The opening of a converter which had seen several months' satisfactory service made it possible for the first time to examine tubes which have been in operation under actual plant conditions. Both visual examination and alpha ray scanning of the interior surfaces of the converter and of the tubes showed that corrosion had been small. Beta ray measurements of the tubes indicated that there was no abnormal accumulation of UX

LABORATORY (Cont'd)

in the pores of the barriers. A few grams of heterogeneous dust which was brushed up from the lower portions of the doughnuts was found to consist largely of ordinary dirt and welding slag left in the line. Neither T nor TX was found in any unusual amounts in this dust. Several tubes were removed for examination and they will be studied metallographically, chemically, and spectographically, and their separating efficiency will be measured. Samples are also being sent to S.A.M. for study.

Test runs on the thermal conductivity methods for analysis of 216-nitrogen mixtures, using the chlorine displacement principle, show that composition of mixtures up to 15% 216 can be read to .02%. By cutting down the sensitivity to about one-tenth this value, it may be possible to provide a compact and simple instrument for field use in covering flash conditioning.

The Mass Spectrometer Laboratory turned out a record number of analyses this week, reaching a total of 630 plant samples for the week. All the counting results have been obtained by fission counting. Measurements of standard films have indicated that the reproducibility of the fission counters agrees with the theoretical value based on the number of counts. Through the use of a set of films of different weights, each counter has been calibrated both with normal material and with a sample containing about 12% 25. A plot of specific fission rate against the weight of film is found to be a straight line up to the thickest films in use at present. Values reported from F-counting are now being corrected by use of these calibrations.

INDUSTRIAL RELATIONS

There were 502 terminations and only 297 hires during the week, resulting in a decrease in the total number of employees from 11,700 to 11,495. Every effort is being made to fill as many requirements for employees by transfers from departments in which work has decreased.

H. D. Kinsey
General Superintendent

LOW PRIORITY

ChemRisk/Shonka Research Associates, Inc., Document Request Form

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J. Lamb / 1034A

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Date submitted to HSA Coordinator _____

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Signature _____

Carbide and Carbon Chemicals Corporation
Oak Ridge, Tennessee Plant WCX

Summary

Part A

Power House

The total K-25 Area load decreased approximately 1.9% from last week to reach an average demand of 124,600 kw. The K-25 process variable frequency load averaged 66,300 kw. All three boilers have been in service supplying steam to S-50 with an average of 1,300,000 lb/hr. The total steam generation averaged 1,975,000 lb/hr., leaving an average of 675,000 lb/hr for the supply of turbines and auxiliaries.

Process

Status of Process buildings as of 8 a.m. June 11, 1945:

	Case I								Case II											Case III							
Sec.	2a					-2			2b										-3	1					-1		
	302					310			303										311	301					309		
Bldg.	1	2	3	4	5	1	2	3	1	2	3	4	5	6	7	8	9	10	1	1	2	3	4	5	1	2	3
Cell																											
1	#	-	-	-	-	-	-	b	#	g	a	-	C	-	-	-	-	-	#	C	-	-	-	-	-	-	#
2	-	-	-	-	#	#	-	-	-	g	-	-	-	-	-	-	-	#	-	-	-	-	-	#	d	-	#
3	-	-	a	-	-	-	-	-	-	e	-	-	-	-	-	-	-	a	-	-	-	-	d	e	-	-	#
4	-	-	-	-	-	-	-	-	-	g	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	g	-	-	-	-	-	-	-	d	-	-	-	-	C	-	-	-	-
6	-	-	-	-	-	-	-	-	-	g	e	-	-	-	-	-	-	-	d	d	d	-	d	a	d	-	d
7	-	-	d	-	-		-	-	-	g	-	-	-	-	-	-	-	-	-	d	-	-	-				
8	-	-	-	-	-		-	-	-	g	-	-	-	-	-	-	-	-	-	-	-	-	-				
9		-	-	-	-				-	e	-	-	-	-	-				-								
10		-	e	-	-				-	g	-	-	-	-	d				-								

	Case IV																	Case V									
Sec.	3a					3b												4									
	304					305												306							312		
Bldg.	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	1	2	3
Cell																											
1	#	e	e	e	g	#	e	e	e	g	g	g	e	f	g	g	g	#	g	g	g	g	g	g	g	g	g
2	e	e	e	e	#	e	e	e	e	g	g	g	e	f	g	g	#	g	g	g	g	g	g	g	g	g	g
3	e	e	e	e	g	e	e	e	e	g	g	g	e	f	g	g	g	g	g	g	g	g	g	g	g	g	g
4	e	C	e	e	g	e	e	e	e	g	g	g	e	f	g	g	g	g	g	g	g	g	g	g	g	g	g
5	e	e	e	e	g	e	e	e	e	g	g	g	e	f	g	g	g	g	g	g	g	g	g	g			
6	e	e	e	e	g	e	e	e	e	g	g	g	e	f	g	g	g	g	g	g	g	g	g	g			
7	e	e	e	e	g	e	e	e	e	g	g	g	e	f	g	g	g	g	g	g	g	g	g	g			
8	e	e	e	e	g	e	e	e	e	g	g	g	e	f	g	g	g	g	g	g	g	g	g	g			
9	e	e	e	e	g	e	e	e	e	g	g	g	e	f	g	g	g	g	g	g	g	g	g	g			
10	e	e	e	e	g	e	e	e	e	g	g	g	e	f	g	g	g	g	g	g	g	g	g	g			
11																		g	g	g	g	g	g	g			
12																		g	g	g	g	g	g	g			
13																		g	g	g	g	g	g	g			
14																		g	g	g	g	g	g	g			

Process (Cont'd)

Status of Process Buildings (Cont'd)

Legend:

- \- C-616 Cascade
- a C-616 Isolated
- b C-216
- c G-74 or evacuated
- d Down for repairs
- e Vacuum testing or instrument checking
- f Acceptance runs complete
- g Under construction
- # Intersectional cell

Conditions	Case I	Case II	Case III	Case IV
Cells in cascade, C-616	64	84	40	0
Cells on inverse recycle, C-616	1	2	1	0
Cells being conditioned	0	0	1	0
Cells running on G-74	1	1	1	1
Cells down for repairs	0	3	8	0
Cells in hands of Instrument Department	0	0	0	13
Cells in hands of Vacuum Testing Department	1	3	1	74
Cells in which acceptance runs are completed	0	0	0	10
Cells under construction	0	8	0	68

The number of cells in cascade at the end of the week had increased to 188 compared to 174 at the beginning of the week.

Some adjustments in instrumentation were necessary during the week due to the adjusting of pressure levels in order to reach the desired higher concentration in the minimum of time. Until the proper setting of instruments was determined by experience, the operation of the cascade was somewhat irregular. However, after attaining the proper pressure levels and determining the best settings of the instruments, the whole cascade operation settled down considerably.

Another problem which was encountered during the week was in using the Purge and Product Room in Building 303-10. These traps plugged up on a very short cycle with operation at a temperature of -110°F and it was necessary to switch the purging operation back to the Purge and Product Room in Building 302-5 until the difficulty was analyzed. It appeared that the difficulty was due to the condensation of HF at the lower temperature in Building 303-10 compared to that in 302-5. By raising the temperature in 303-10 to -90°F and by introducing additional inert gas through the traps, it was found to be possible to prevent this condensation. Since the setting of this procedure the purging of the cascade has been proceeding on a fairly uniform basis.

The most serious interference with the operation during the week occurred on June 7 at 6:40 p.m., when there was a water failure due to closing of all the check valves on the discharge of the recirculating pumps at the main water station. The closing of the valves was due to the combination of an operating error together with failure of the auxiliary electrical equipment to function. It was possible to keep the upper portion of the cascade above 302-5 on stream by reducing the frequency to 45 cycles. At the lower pressures in this portion, together with the lower speed, the temperatures did not rise excessively. However, it was necessary to shut down all the other buildings until water was again available. After pressure was available, at 9:30 p.m., it was necessary to operate the lower portion of the system as a separate cascade until all these buildings were operating satisfactorily. The two cascades were operating by the morning of June 8 with very little interference to separation. The operating forces handled the emergency very satisfactorily, and the system was returned to normal with much less interference to separation than had been anticipated for such an occurrence.

Laboratory

The Conditioning Building Laboratory was formally transferred to the Chemistry Laboratory this week under the Process Control Section.

Porosity measurements have been made on the barrier tubes taken from the converter B-67, which was opened May 28, in comparison with two unused tubes which have been held in the laboratory as reference standards. The standards have decreased in porosity somewhat below the manufacturer's values, but the tubes which had been in use show a considerably lower porosity. Specific area measurements show about 40 to 50% less area in the used barriers than in the new ones.

Precision of current measurements of plant product concentration by the fission counting method ranges from 0.25% probable error for samples of top concentration, to 0.7% for samples of feed concentration. The precision of mass spectrometer measurements ranges from 0.6% on normal material, to 1.4% on product. All answers on isotopic analyses are now being telephoned to the Cascade Co-ordinator, from which the information is available to authorized persons as soon as the results are complete.

Industrial Relations

The overall employment was reduced from 11,495 at the start of the week to 11,416. There were 301 new hires and 380 terminations. 165 were resignations and 215 were discharges.

The Training Department is now conducting 30 supervisory meetings every week. Cases which indicate exceptionally good or faulty supervision are used in these meetings to illustrate the need for the particular instruction.

H. D. Kinsey
General Superintendent

LOW PRIORITY

ChemRisk/Shonka Research Associates, Inc., Document Request Form

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(This section to be completed by subcontractor requesting document)

J Lamb / 1034A

Requestor *Document Center (is requested to provide the following document)*

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Date document received _____

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Carbide and Carbon Chemicals Corporation
Oak Ridge, Tennessee Plant WCX

Summary - Part A

PROCESS

Status of Process Buildings as of 8 a.m. June 18, 1945:

Sec.	-3	-2			-1			1					2a					2b									
Bldg.	311	310			309			301					302					303									
	1	3	2	1	3	2	1	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10
Cell																											
1	-	-	-	-		-	-	-	-	-	-	-	C	-	-	-	-	C	g	b	-	-	-	-	-	-	a
2	-	-	-	C		-	-	-	-	-	-	C	-	-	-	-	a	-	g	-	-	-	-	-	-	-	(-)
3	-	-	-	-	C	-	-	-	-	d	-	-	-	-	-	-	-	-	e	-	-	-	-	-	-	-	-
4	d	-	-	-	-	-	-	-	-	-	b	-	-	-	-	-	-	-	e	-	-	-	-	d	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	e	-	-	-	-	-	-	-	d
6	-	-	-	-	-	-	-	b	-	d	C	-	-	-	-	-	-	-	g	-	-	-	-	-	-	-	-
7	-		-	-				d	-	-	-		-	-	-	-	-	-	e	-	-	-	-	-	-	-	-
8	-		-	-				-	d	-	-		-	-	-	-	-	-	g	-	-	-	-	-	-	-	-
9	-													-	-	-	-	-	g	-	-	-	-	-			
10														-	b	-	-	-	g	-	-	-	-	-			

Sec.	3a					3b												4									
Bldg.	304					305												306							312		
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	1	2	3
Cell																											
1	(C)	C	e	e	e	(e)	e	e	e	g	g	e	e	e	f	g	f	(g)	g	g	g	g	g	f	(g)	(g)	(e)
2	e	C	e	e	( )	e	e	e	e	g	g	e	e	e	f	g	( )	g	g	g	g	g	g		g	g	g
3	e	C	e	e	e	e	e	e	e	g	g	e	e	e	f	g	f	g	g	g	g	g	g	f	g	g	e
4	e	C	e	e	e	e	e	e	e	g	g	e	e	e	f	g	f	g	g	g	g	g	g	f	g	g	g
5	e	C	e	e	e	e	e	e	e	g	g	e	e	e	f	g	f	g	g	g	g	g	g	f	g	g	e
6	e	C	e	e	e	e	e	e	e	g	g	e	e	e	f	g	f	g	g	g	g	g	g	f	g	g	e
7	e	C	e	e	e	e	e	e	e	g	g	e	e	e	f	g	f	g	g	g	g	g	g	f	g	g	e
8	e	C	e	e	e	e	e	e	e	g	g	e	e	e	f	g	f	g	g	g	g	g	g	f	g	g	e
9	C	C	e	e	e	e	e	e	e	g	g	e	e	e	f	g	f	g	g	g	g	g	g	f	g	g	e
10	C	C	e	e	e	e	e	e	e	g	g	e	e	e	f	g	f	g	g	g	g	g	g	f	g	g	e
11																		g	g	g	g	g	g	f	g	g	e
12																		g	g	g	g	g	g	f	g	g	g
13																		g	g	g	g	g	g	f	g	g	e
14																		g	g	g	g	g	g	f	g	g	g
15																									g	g	e
16																									g	g	g
17																									g	g	e
18																									g	g	g
19																									g	g	e
20																									g	g	g
21																									g	g	e
22																									g	g	g

Legend:

- C-616 Cascade
a C-616 isolated
b C-216
C G-74 or evacuated
d Down for repairs
e Vacuum testing or instrument checking
f Acceptance runs complete
g Under construction
() Intersectional cell

PROCESS (Cont'd)

Status of Process Buildings (Cont'd)

Stream Efficiency at 8 a.m. = $\frac{195}{200} \times 100 = 93\%$.

Cell Summary

Conditions	Case I	Case II	Case III	Case IV	Case V	312
Cells in cascade with C-616	66	64	45	0	0	0
Cells in 3-building cascade, C-616	0	20	0	0	0	0
Cells on inverse recycle, C-616	0	1	0	0	0	0
Cells being conditioned	1	2	2	0	0	0
Cells running on C-74	0	0	1	13	0	0
Cells down for repairs	0	4	4	0	0	0
Cells in which vacuum testing is complete	0	0	0	12	0	0
Cells in hands of vacuum testing crews	0	4	0	92	0	12
Cells in which acceptance runs are complete	0	0	0	19	14	0
Cells under construction	0	6	0	30	84	54

There were 195 cells running in cascade at the end of the week.

Conditions as a whole were very satisfactory during the week, and the best results to date were obtained.

The first serious coolant leak into the system occurred on June 17 when a leak was discovered in Building 301-3. After investigation, it was found that the leak was in Cell 6, and the cell was isolated from the cascade. Although the coolant has not moved down the system as fast as was anticipated, no serious interruption to isotopic separation has been detected.

Case IV buildings are rapidly being prepared for operation. These buildings will be given a thorough preliminary run on normal feed material before they are placed in cascade with the Section 2b buildings.

POWER

The total K-25 Area load increased approximately 6.3% from last week to reach an average demand of 132,450 kw. The K-25 process variable frequency load averaged 75,500 kw. All three boilers have been in service supplying steam to S-50 with an average of 1,110,000 lb/hr. The total steam generation averaged 1,835,000 lb/hr., leaving an average of 725,000 lb/hr for the supply of turbines and auxiliaries.

LABORATORY

Ten tuballoy determinations were made on a reference sample submitted by Tennessee Eastman Corporation. The results obtained by us and by them were compared and found to be in excellent agreement.

Tests made on the counting analysis of samples weighed directly as UO_2F_2 indicate that the weight is reproducible enough for use with samples where an accuracy better than 1% is not required. Use of this method would reduce the time required for chemical preparation of rush samples.

A null method for the operation of the mass spectrometers, in which the 28 peak is exactly balanced against the 25 peak by means of the voltage dividing scaler for both unknown and standard, was put into operation this week. It is already apparent

LABORATORY (Cont'd)

that a considerable saving of time in operation and calculation will be effected. It appears that this method of operation of a machine equipped with the improved manifold may be fully as fast as the automatic recording machine.

INDUSTRIAL RELATIONS

The overall employment was reduced from 11,416 at the start of the week to 11,374. There were 328 new hires and 370 terminations. The bulk of the terminations continues to be in the common labor groups and as a result of discharges rather than resignations.

The discussion subject for the weekly supervisory meetings was The Mutual Benefit Association and Group Insurance. There were 38 meetings attended by approximately 537 supervisors.

The latest report of absenteeism shows that for the week ending May 27 the percentage of absenteeism decreased from 9.49% to 8.97%.

A bond quota of $100,000 was set for the Seventh War Loan Drive, and this quota has been exceeded two weeks before the drive is ended.

H. D. Kinsey
General Superintendent

LOW PRIORITY

ChemRisk/Shonka Research Associates, Inc., Document Request Form

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J Lamb / 1034A

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Carbide and Carbon Chemicals Corporation
Oak Ridge, Tennessee Plant WCX

Summary - Part A

PROCESS

Status of Process Buildings as of 8 a.m. June 25, 1945:

Sec.	-3	-2	-1	1	2a	2b
Bldg.	311	310	309	301	302	303
	1	3 2 1	3 2 1	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5 6 7 8 9 10
Cell						
1	(-)	- - -	- -	- - - - -	(c) - - - -	(c) g b - - - - - - -
2	-	- - (c)	- -	- - - - (c)	- - - - (-)	- g - - - - - - - (-)
3	-	- - -	(c) - -	- - - - -	- - - - -	- e - - - - - - -
4	-	- d -	- - -	- - - b -	- - - - -	- e - - - - - - a -
5	-	- - -	- - -	- - - - -	- - - - -	- e - - - - - - a
6	-	- - -	- - -	- - d - -	- - - - -	- g - - - - - - -
7	-	- -		- - - -	- - - - -	- e a - - - - - -
8	-	- -		- - - C	- - d - -	- g - - - - - - -
9	-				- - - -	- e - - - -
10	-				- - - -	- e - - - -

Sec.	3a	3b	4	
Bldg.	304	305	306	312
	1 2 3 4 5	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7	1 2 3
Cell				
1	(a) a e e e	(c) e b e e e e e e e g f	(g) f g g g f f	(g)(g)(e)
2	a a e e(c)	C e b e e e e e e e g (f)	f f g g g f	g g e
3	a a e e e	C e b e e e e e e e g f	f f g g g f f	g g e
4	a a e e e	C e b e e e e e e e g f	f f g g g f f	g g e
5	a a e e e	C e b e e e e e e e g f	f f g g g f f	g g e
6	a a e e e	C e b e e e e e e e g f	f f g g g f f	* g e
7	a a e e e	C e b e e e e e e e g f	f f g g g f f	g g e
8	a a e e e	C e b e e e e e e e g f	f f g g g f f	* g e
9	a a e e e	C e b e e e e e e e g f	f f g g g f f	g g e
10	a a e e e	C e b e e e e e e e g f	f f g g g f f	g g e
11			f f g g g f f	g g e
12			f f g g g f f	g g e
13			f f g g g f f	g g e
14			f f g g g f f	g g e
15				g g e
16				g g e
17				g g e
18				g g g
19				g g e
20				g g g
21				g g e
22				g g g

Legend:

- \- C-616 Cascade
- a C-616 Isolated
- b C-216
- C C-74 or evacuated
- d Down for repairs
- e Vacuum testing or instrument checking
- f Acceptance runs complete
- g Under construction
- * R-Pump test lube

PROCESS (Cont'd)

Status of Process Buildings (Cont'd)

Stream efficiency at 8 a.m. = $\frac{201}{210}$ = 100 = 95.7%.

Cell Summary	Case I	Case II	Case III	Case IV	Case V	312
Cells in cascade - C-616	65	87	49	0	0	0
Cells on building inverse recycle - C-616	0	0	0	19	0	0
Cells on cell inverse recycle - C-616	0	3	0	0	0	0
Cells being purged in preparation for C-616 charging	0	0	0	10	0	0
Cells being conditioned	0	1	1	0	0	0
Cells running on C-74	0	0	1	9	0	0
Cells down for repairs	2	0	1	0	0	0
Cells in which vacuum testing is complete	0	0	0	16	0	0
Cells being vacuum tested	0	6	0	93	0	18
Cells in which acceptance runs are complete	0	0	0	9	54	0
Cells under construction	0	4	0	10	42	46

The number of cells running in cascade by the end of the week was increased to 201.

Operating conditions were very satisfactory during the week, and 94% of all available cells were kept in operation continuously.

One of the most interesting problems during the week was the movement of the coolant which had leaked into the cascade the previous week. Instead of moving rapidly to the bottom of the system as was anticipated, the material remained approximately in the same area in which the leak originally developed. Various tests and theories have been tried to explain this phenomenon. At the moment no satisfactory explanation has been advanced.

Attempts to unplug several of the converters in place have not been very satisfactory. It appears to be necessary to remove the converters in Cell 1, of Building 303-3, to the Conditioning Building for further attempts to unplug them.

The Elliott pumps in the 600 Section have continued to cause difficulty. As most of the trouble has been caused by the seals, steps have been taken to see if the Elliott Company could produce a seal which would be more suitable for the conditions under which these pumps are operated.

Three buildings in Case IV were conditioned and fed with normal feed material for preliminary tests. The results obtained from these tests have been very satisfactory So far there has been no difficulty with any of the pumps, which indicates that the program for reconditioning these pumps has been worth while.

POWER

The total K-25 Area load reached an average demand of 138,500 kw for the week, resulting in an increase of 4.6% over the previous week's demand. Station generation supplied 65% of the load, with the remainder furnished by TVA over the 154-kv ties. All three boilers were in service continuously and furnished steam to S-50 at an average rate of 1,225,000 lb/hr in addition to the steam required for electrical generation.

LABORATORY

Plans are being made for a material salvage plant both for recovery of tuballoy from the decontamination solutions and for conversion of the purified material to process gas.

Metallographic examination of silver brazed copper tubing which had been exposed to flowing liquid 616 for five weeks showed that there had been no appreciable attack of either the copper or the silver brazing material. Metallographic examination of one of the tubes of converter B-67, which had seen several months' service in 616, showed no structural difference as compared to the same tube before service.

After a month of continuous operation, the fission counter was out of service several hours this week for repairs to the sliding sample holders.

Further attempts to correlate the alpha count and the fission count on the same samples have shown generally good correlation between samples taken within one or two days' operation, but large changes in the correction function are necessary for samples taken a week apart.

Mass spectrometer maintenance has steadily improved to the point where this week seven machines were available an average of 60% of the time, and at least three machines were operable all of the time.

INDUSTRIAL RELATIONS

The total number of employees was reduced from 11,374 at the start of the week to 11,310 on June 24. There were 287 new hires and 351 terminations. The majority of terminations occur in the common labor group, and result from discharges rather than from resignations.

The number of supervisors attending the weekly supervisory conferences has increased steadily during the month of June, from 390 for the week ending June 3, to 542 for the week ending June 24. The safety program at the Clinton Engineer Works was the subject of these conferences for the week ending June 24. There were 42 meetings attended by approximately 542 supervisors.

The absentee reports indicate that the percentage of absenteeism decreased to 8.84% for the week ending June 3, from 8.97% for the previous week.

Approval has been received to pay night shift bonuses effective July 2 (4¢ per hour for the 4-12 shift, and 6¢ per hour for the 12-8 shift), and a notice to this effect is being sent to all employees.

The following figures indicate that for the Seventh War Loan Drive we have exceeded our quota by 62%, and the drive will continue through July 7:

Cash sales (April, May and June)	$ 47,825.00
Payroll deductions - hourly and weekly salaried employees through June 17, exempt employees through the month of June	114,266.30
	$162,091.30

H. D. Kinsey
General Superintendent

LOW PRIORITY

ChemRisk/Shonka Research Associates, Inc., Document Request Form

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J Lamb / 1034A

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Date submitted to ADC _____

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Date submitted to ChemRisk/Shonka and DOE 10-11-95

(This section to be completed by ChemRisk/Shonka Research Associates, Inc.)

Date document received _____

Signature _____

Carbide and Carbon Chemicals Corporation
Oak Ridge, Tennessee Plant WCX

Summary - Part A

PROCESS

Status of Process Buildings as of 8 a.m. July 9, 1945:

Sec.	-3	-2			-1			1					2a					2b									
Bldg.	311	310			309			301					302					303									
Cell	1	3	2	1	3	2	1	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10
1	(-)	-	-	-		-	-	-	-	-	-	-	(C)	-	-	-	-	(C)	g	d	-	-	-	-	-	-	-
2	-	-	-	(C)		-	-	-	d	-	-	(C)	-	-	-	-	(C)	-	g	-	-	-	-	-	-	-	(-)
3	-	-	-	-	(C)	-	-	-	-	-	-	-	-	-	-	d	-	-	e	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	d	-	-	d	-	-	-	-	-	-	-	e	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	e	-	-	-	-	-	-	-	a
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	e	-	-	-	-	-	-	-	-
7	-		-	-				-	-	-	-		-	-	-	-	-	-	e	-	-	-	-	-	-	-	-
8	-		-	-				-	-	-	-		-	-	d	-	-	-	g	-	-	d	-	-	-	-	-
9	-													-	-	-	-	-	e	-	-	-	-	-			
10	-													-	-	-	-	-	e	-	-	-	-	-			

Sec.	3a					3b												4							312		
Bldg.	304					305												306									
Cell	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	1	2	3
1	(C)	-	-	C	C	(C)	-	-	-	e	e	e	-	b	e	e	e	(e)	e	f	f	f	e	e	(g)	(g)	(e)
2	-	-	-	C	(C)	-	-	-	-	e	e	e	-	b	e	e	(e)	(e)	e	f	f	f	e		g	g	e
3	-	-	-	C	C	-	-	-	-	e	e	e	-	b	e	e	e	e	e	f	f	f	e	e	g	g	e
4	-	-	-	e	e	-	-	-	-	e	e	e	-	b	e	e	e	e	e	f	f	f	e	e	g	g	e
5	-	-	-	C	C	-	-	-	-	e	e	e	-	b	e	e	e	e	e	f	f	f	e	e	g	g	e
6	-	-	-	e	C	-	-	-	-	e	e	e	-	b	e	e	e	e	e	f	f	f	e	e	*	g	e
7	-	-	-	C	C	-	-	-	-	e	e	e	-	b	e	e	e	e	e	f	f	f	e	e	g	g	e
8	-	-	-	e	C	-	-	-	-	e	e	e	-	b	e	e	e	e	e	f	f	f	e	e	*	g	e
9	-	-	-	C	C	-	-	-	-	e	e	e	-	b	e	e	e	e	e	f	f	f	e	e	g	g	e
10	-	-	-	C	d	-	-	-	-	e	e	e	-	b	e	e	e	e	e	f	f	f	e	e	g	g	e
11																		e	e	f	f	f	e	e	g	g	e
12																		e	e	f	f	f	e	e	g	g	e
13																		e	e	f	f	f	e	e	g	g	e
14																		e	e	f	f	f	e	e	g	g	e
15																									g	g	e
16																									g	g	e
17																									g	g	e
18																									g	g	e
19																									g	g	e
20																									g	g	e
21																									g	g	e
22																									g	g	e

Legend:

- \- C-616 Cascade
- a C-616 Isolated
- b C-216
- C G-74 or evacuated
- d Down for repairs
- e Vacuum testing or instrument checking
- f Acceptance runs complete
- g Under construction
- () Intersectional cell
- * R-pump test loop

Stream efficiency at 8 a.m. = $\frac{279}{288}$ x 100 = 97%.

PROCESS (Cont'd)

Status of Process Buildings (Cont'd)

Cell Summary	Case I	Case II	Case III	Case IV	Case V	K-312
Cells on cascade - C-616	65	87	49	78	0	0
Cells on inverse recycle - C-616	0	1	0	0	0	0
Cells running evacuated	0	0	0	0	0	0
Cells running on G-74	0	0	0	14	0	0
Cells being conditioned	0	0	0	10	0	0
Cells down for repairs	2	2	3	1	0	0
Cells in which vacuum testing is complete	0	1	0	8	0	0
Cells being vacuum tested	0	7	0	55	54	22
Cells in which acceptance runs are complete	0	0	0	0	42	0
Cells under construction	0	3	0	0	0	42

The number of cells on stream was increased to 279 by the end of the week. A large percentage of the increase was due to adding Buildings 304-3, 305-2 and 305-8 on cascade. These buildings were added to the system without any particular difficulty.

Building 303-10 is still being used as the top building in the cascade since product is being removed from that point. Building 303-10 is also used for purging the entire cascade to the purge and product unit in this building. Arrangements are being made to use one of the 305 buildings as the top building for a temporary period.

A test in Building K-311-1 indicated that seven cells of Size 3 converters had a purge capacity of 6,000 scf/day of G-74 when reducing the 616 concentration to less than 0.01 mol %.

After completion of the reconditioning test in Cell 4 of Building 301-4, it was found that the tube bundle in the gas cooler of the sixth stage converter was leaking in at least 76 of the 186 tubes. After vacuum testing the remainder of the gas coolers, this converter will be removed and replaced, after which the cause of the leakage can be more readily determined.

The pressures were adjusted upward in all the buildings from the bottom up through 303-6 in order to increase the overall capacity of the cascade. The increased pressures caused the variable frequency load to reach approximately 115,000 kw, which is almost the maximum capacity available with two boilers in operation.

POWER

The total K-25 Area load increased 5.2% over the previous week's demand to reach an average of 152,000 kw, of which TVA supplied 29% over the 154-kv ties. No. 2 boiler was out of service all week for overhaul. The average steam demand by S-50 was 330,000 lb/hr.

Laboratory

Metallographic examination of the butt welds from the impeller rings which had been x-rayed verified the existence of the defects which were shown by the x-ray photographs.

The probable error of fission counting as determined by duplicate analyses has fallen off to 0.5 - 0.8%, although the error of counting on individual amplifiers and the precision of other steps in the analysis have remained constant. It appears likely that there are differences between the counting rate from one ampli-

LABORATORY (Cont'd)

fier to another due to variations in the spacing between the film and the high voltage plate. Recalibration of the counters with greater control of this critical distance will probably be necessary.

Detailed plans for the installation of a mass spectrometer to be attached directly to the plant stream in Building 311-1 are now essentially complete. If this experiment proves the feasibility of measuring concentrations directly in the plant stream, it will have these advantages: The time required for isotopic analysis would be cut from the present three to six hours, to fifteen minutes or less, and the job of sampling with delivery of sample tubes, cleaning tubes, and the possibility of mixing samples would all be eliminated.

The comparison of results of mass spectrometer analyses and fission counting at several different levels has been made available this week by the routing of control standards disguised as plant samples to the two laboratories. Ratios obtained by the two methods are shown in the following table:

Fission Counting	Mass Spectrometer
0.824	0.812
9.76	9.59
13.43	13.38

INDUSTRIAL RELATIONS

The plan to improve the standard of workers throughout the plant was continu during this week. There were 362 terminations, and 319 new employees were hired. The overall employment figures were reduced from 11,219 to 11,164.

The Seventh War Loan Drive was completed with a record of 208% of the assigned quota for this plant. This is the highest record of any contractor on the CEW area.

A number of new housing assignments were made by the Army to this company, and as a result, the waiting lists will be reduced.

H. L. Kinsey
General Superintendent

LOW PRIORITY

ChemRisk/Shonka Research Associates, Inc., Document Request Form

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(This section to be completed by subcontractor requesting document)

J Lamb / 1034A

Requestor — Document Center (is requested to provide the following document)

Date of request 8/18/95 Expected receipt of document 10/20/95

Document number K2-5417 Part A Date of document 8-5-45

Title and author (if document is unnumbered)

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Date submitted to ADC _____

Date submitted to HSA Coordinator _____

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Date received from CICO _____

Date submitted to ChemRisk/Shonka and DOE 10-4-95

(This section to be completed by ChemRisk/Shonka Research Associates, Inc.)

Date document received _____

Signature _____

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Carbide and Carbon Chemicals Corporation
Oak Ridge, Tennessee Plant WCX

REPORT NO.
KZ 5417

Summary - Part A

PROCESS

Status of Process Buildings as of 8:00 a. m. August 6, 1945:

Sec.	-3	-2			-1			1					2a					2b									
Bldg.	311	310			309			301					302					303									
	1	3	2	1	3	2	1	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10
Cell																											
1	(-)	-	-	-		-	-	-	-	-	-	-	(C)	-	-	-	-	(C)	g	-	-	-	-	-	-	-	-
2	-	-	-	(C)		-	-	-	-	-	-	(C)	-	-	-	-	(C)	-	●	d	-	-	-	-	-	-	(-)
3	-	-	-	-	(C)	-	-	-	-	-	-	-	-	-	-	-	-	-	●	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	●	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	●	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	d	-	-	-	-	-	-	-	-	-	-	-	●	-	-	-	-	-	-	-	-
7	-	-	-					-	-	-	-		-	-	-	-	-	-	●	-	-	-	-	-	b	-	-
8	-	-	-					-	-	-	-		-	-	-	-	-	-	●	-	-	-	-	-	-	d	-
9	-													-	-	-	-	-	●	-	-	-	-	-			
10	-													-	-	-	-	-	●	-	-	-	-	-			

Sec.	3a					3b												4							312		
Bldg.	304					305												306									
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	1	2	3
Cell																											
1	(C)	-	-	-	-	(C)	-	-	-	-	-	-	-	-	-	-	d	(C)	C	●	●	●	b	a	(●)	(●)	(f)
2	-	-	-	-	(C)	-	-	-	-	-	-	-	-	-	-	-	(-)	a	●	●	●	●	b		●	●	f
3	d	-	-	-	-	-	-	-	-	-	C	-	-	-	-	-	-	a	d	●	●	●	b	a	g	●	f
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	d	a	●	●	●	●	b	a	●	●	f
5	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a	●	C	●	●	C	a	g	●	f
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a	C	●	●	●	b	a	g	●	f
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	d	a	d	C	●	●	b	a	g	●	f
8	-	-	d	d	-	-	-	-	d	-	-	-	-	-	-	a	d	a	C	C	●	●	b	a	*	●	f
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a	C	C	C	●	●	b	a	g	●	f
10	-	-	-	-	-	-	-	-	d	-	-	-	-	-	-	-	-	a	C	d	●	●	b	C	●	●	f
11																		a	C	C	●	●	b	a	g	●	f
12																		a	C	C	●	●	b	a	●	●	f
13																		a	C	C	●	●	b	a	●	●	f
14																		a	C	d	●	●	b	a	●	●	f
15																									●	●	f
16																									●	●	f
17																									●	●	f
18																									●	●	f
19																									g	●	f
20																									[illegible]	[illegible]	[illegible]
21																									g	g	d
22																									●	●	[illegible]

Legend:

-	C-616 Cascade	C	G-74 or Evacuated	f	Mechanical runs complete
a	C-616 Isolated	d	Down for repairs	g	Under construction
b	C-216	●	Vacuum testing or Inst. Checking	( )	Intersectional cell
				*	"R" Pump Test Loop

Stream Efficiency = $\frac{359}{376}$ x 100 = 95.5%

UNCLASSIFIED

PROCESS (Cont'd)

Status of Process Buildings (Cont'd)

Cell Summary	Case I	Case II	Case III	Case IV	Case V	312
Cells in cascade - C-616	67	88	51	153	0	0
Cells in inverse recycle - C-616	0	0	0	2	24	0
Cells running on G-74	0	0	0	2	17	0
Cells running on C-216	0	1	0	0	13	0
Cells running evacuated	0	0	0	0	3	0
Cells down for repairs	0	2	1	9	3	1
Cells in which vacuum testing is complete	0	7	0	0	39	0
Cells being vacuum tested	0	2	0	0	0	32
Cells in which mechanical runs are complete	0	0	0	0	0	20
Cells under construction	0	1	0	0	0	10

There were 359 cells out of an available 376 in cascade at the end of the week.

The 306 buildings are being given preliminary tests on normal feed material in order to work out the difficulties inherent in the high speed pumps and the smaller converters. The use of normal feed material will reduce the consumption of enhanced material when these units are put on strain.

The product removal unit was transferred from Building 303-10 to Building 305-11. The cells in Building 305-12 and Cells 2, 4, and 6 in Building 305-11 are used for the separation of light gases, which are then purged from the top of Building 305-12.

The equipment in Building 312-3 is being prepared for a preliminary test run.

The tendency for additional converters to plug has been greatly reduced since removing the chokes in the dry air lines to the atmospheric seals, and since revising the procedure on the seal exhaust system.

It is also now the practice to remove cells from operation and to replace seals that show excessive leakage.

POWER

The average electrical demand of the K-25 Area for the week was 194,800 kw, which was slightly below the demand for the previous week. TVA supplied 25.3% of the required energy over the 154-kv ties. No. 3 Boiler was out of service all week for overhaul.

LABORATORY

Pairs of samples of 616 drawn off as liquid during the filling of waste drums in the 600 Building gave considerably different analytical results, indicating that the material in the large cylinders is not at all homogeneous.

No explosion hazard has been found in mixtures of ammonia, air, and oil vapor at atmospheric pressure and 180° C.

LABORATORY (Cont'd)

Molecular weight determinations run on fractionated 816-Cl indicate that the material is very largely 816 with only a small amount of chloride being found in the last fraction.

It has been found that spurious counts may be recorded by the fission counter when the film has a high alpha activity due to coincident alpha pulses reaching beyond the discriminator level.

Analysis of the data obtained for special engineering tests indicates a probably error of an individual measurement of 0.4% of the ratio. This precision is attainable when the difference between the two sets of samples is not more than 10%, and when certain non-routine operational procedures are employed. This high precision makes possible the measurement of the average enlargement factor over a building with a limit of error of less than 3%, whereas 5% had been the goal. It should also make possible a reduction in the number of samples taken in other buildings being tested, and a consequent reduction in the time these buildings are off in cascade.

INDUSTRIAL RELATIONS

During the week there were 410 hires and 400 terminations. Therefore, the payroll was increased to 11,333 at the end of the week.

The first fatality since the start of operations occurred when an electrician was electrocuted while working on a 110 V. lighting circuit.

H. D. Kinsey
General Superintendent

LOW PRIORITY

ChemRisk/Shonka Research Associates, Inc., Document Request Form

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(This section to be completed by subcontractor requesting document)

J Lamb / 1034A

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Date received from CICO _____

Date submitted to ChemRisk/Shonka and DOE 10-17-95

(This section to be completed by ChemRisk/Shonka Research Associates, Inc.)

Date document received _____

Signature _____

UNCLASSIFIED

Carbide and Carbon Chemicals Corporation
Oak Ridge, Tennessee Plant WCX

Summary - Part A

PROCESS

Status of Process Buildings as of 8 a.m. August 13, 1945:

Sec.	-3	-2			-1			1					2a					2b									
Bldg.	311	310			309			301					302					303									
	1	3	2	1	3	2	1	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10
Cell																											
1	(-)	-	-	-		-	-	-	-	-	-	-	(C)	-	-	-	-	(C)	●	-	b	d	-	-	-	-	-
2	-	-	-	(C)		-	-	-	-	-	-	(C)	-	-	-	-	(C)	-	●	-	-	-	-	-	-	-	[illegible]
3	-	-	b	-	(C)	-	-	-	-	-	-	-	-	-	d	-	-	-	●	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	d	-	-	-	-	-	-	-	-	●	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	●	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	●	-	-	-	-	-	-	-	-
7	-	-	-					-	-	-	-		-	-	-	-	-	-	C	-	-	-	-	-	-	-	-
8	-	-	-					-	-	-	-		-	-	-	-	-	-	●	-	-	-	-	-	-	-	-
9	-													-	-	-	-	-	C	-	-	-	-	-			
10	-													-	-	-	-	-	●	-	-	-	-	-			

Sec.	3a					3b												4									
Bldg.	304					305												306							312		
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	1	2	3
Cell																											
1	(C)	-	-	-	-	(C)	-	-	-	C	-	-	-	-	-	-	(d)	a	a	a	d	a	a	a	(●)	(●)	(a)
2	-	-	-	-	(C)	b	-	-	-	-	-	-	-	-	-	-	(-)	a	a	a	d	a	a		●	●	a
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a	a	d	C	a	a	a	●	●	a
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a	a	a	b	a	a	a	●	●	a
5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a	a	a	b	a	a	a	●	●	a
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a	a	a	b	a	a	a	●	●	a
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	d	a	d	a	b	a	a	a	●	●	a
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	d	a	a	a	b	a	a	a	*	●	a
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a	a	a	b	a	a	a	●	●	a
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a	a	a	b	a	a	a	●	●	a
11																		a	d	a	b	C	a	a	●	●	a
12																		a	a	a	b	a	a	a	●	●	a
13																		a	a	a	b	a	a	a	●	●	a
14																		a	a	a	b	b	d	a	●	●	a
15																		a	a	a	b	b	d	a	●	●	a
16																									●	●	a
17																									●	●	a
18																									●	●	a
19																									●	●	a
20																									●	●	a
21																									●	●	d
22																									●	●	d

Classification changed to: UNCLASSIFIED (level and category)
Thomas W. Jelley 9/13/95
ADC or ADD signature Date
14 Sep 95
ADD signature (final reviewer) Date

Legend:

- C-616 Cascade
a C-616 Isolated
b C-216
C G-74 or evacuated
d Down for repairs
● Vacuum testing or instrument checking
g Conditioning complete
( ) Intersectional cell
* R-pump test loop

Stream efficiency as of 8 a.m. = $\frac{366}{376}$ x 100 = 97.4%.

UNCLASSIFIED

PROCESS (Cont'd)

Status of Process Buildings (Cont'd)

Cell Summary	Case I	Case II	Case III	Case IV	Case V	312
Cells in cascade - C-616	65	89	51	161	0	0
Cells on inverse recycle - C-616	0	0	0	0	76	0
Cells running on G-74	0	2	0	0	1	0
Cells running on C-216	1	1	0	0	11	0
Cells running evacuated	0	0	0	1	1	0
Cells purging C-216 for C-616	0	0	0	1	1	0
Cells down for repairs	1	1	1	3	6	2
Cells in which vacuum testing is complete	0	2	0	0	0	0
Cells being vacuum tested	0	6	0	0	0	41

At the end of the week 366 out of an available 376 cells were running in cascade. In addition to these, all of the 306 buildings, except 306-4, were being operated on normal feed material. Building 306-4 was being conditioned at the end of the week.

Various difficulties were encountered and overcome in the past week in these buildings, such as unplugging coolant lines, replacing seals, and replacing motors, about 1% of which have failed so far under operating conditions.

Conditions throughout the rest of the cascade were very satisfactory. The per cent of available cells on stream has been gradually increasing.. The tendency for the converters to plug has been practically eliminated.

The product removal unit in 305-11 was used throughout the week with satisfactory results. The top of the cascade is being purged in 305-12 with Building 303-10 being used as a side purge. This procedure is giving very satisfactory results, as it reduces the concentration of light gases very markedly in the 304 and 305 buildings and reduces the chances of upsetting the entire cascade due to minor surges.

The valves which are fitted with Firestone rubber seats are causing increasing difficulties due to the tackiness of the rubber. When the valves are in a closed position the rubber becomes tacky enough to cause the rubber to pull out of the seat when the valve is opened. It is planned to replace this rubber with a new type of valve seat fitted with R-10 plastic.

POWER

The average electrical demand of K-25 Area for the week increased 3% over the previous week's demand, to reach 200,850 kw, of which 26.2% was supplied by TVA over the 154-kv ties.

Overhaul of No. 3 Boiler was completed on August 6, when it was returned to service, and more steam was made available for S-50. The average steam demand by S-50 averaged 406,000 lb/hr for the week.

LABORATORY

The Kellex zirconium dimethylamino-azo-arsenate test for C-216 in air appears to be one of the most satisfactory developed thus far.

The work of decontaminating silver cylinders has reached the stage where it may be turned over to Process. The sodium chloride method of determining 216 has been

LABORATORY (Cont'd)

made more nearly quantitative by the use of high flow rates.

Recommendations have been made to the Equipment Test and Inspection Division concerning treatment of coolant cooler head bolts. Several possible causes of failure of the A.C. centrifugal pump in the Power House were pointed out.

A special hydrogen torch is being built for the reduction of 616.

Mixtures of ammonia with air will not explode at 180°C. Certain mixtures of ammonia with oxygen or oxygen and nitrogen are explosive.

Adsorptive capacity of carbon for 616 is affected by previous exposure of the carbon to air.

Two lines of approach are being followed in the solution of the mass spectrometer source problem. Tests are being made on the replacement of the selector valve with five two-way valves.

INDUSTRIAL RELATIONS

There were 421 hires and 373 terminations during the week, increasing the pay roll from 11,373 to 11,381.

H. D. Kinsey
General Superintendent

LOW PRIORITY

ChemRisk/Shonka Research Associates, Inc., Document Request Form

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(This section to be completed by subcontractor requesting document)

J Lamb / 1034A

Requestor / Document Center (is requested to provide the following document)

Date of request 8/18/95 Expected receipt of document 10/20/95

Document number K2-5421 Rev A Date of document ~~5/00/50~~ 9-2-45

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Date received from CICO _____

Date submitted to ChemRisk/Shonka and DOE 10-11-95

(This section to be completed by ChemRisk/Shonka Research Associates, Inc.)

Date document received _____

Signature _____

Carbide and Carbon Chemicals Corporation
Oak Ridge, Tennessee Plant WCX

UNCLASSIFIED Summary - Part A

PROCESS

Status of Process Buildings as of 8 a.m. September 4, 1945:

Sec.	-3	-2	-1	1	2a	2b
Bldg.	311	310	309	301	302	303
	1	3 2 1	3 2 1	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5 6 7 8 9 10
Cell						
1	(-)	- - -	- -	- - - - -	(C) - - - -	(C) - - - - - - - - -
2	-	- - (C)	- -	- - - a (C)	- - - - (C)	- ● - - - - - - - (-)
3	-	- - -	(C) - -	- - - - -	- - - - -	- - - - - - - b - -
4	-	- - -	- - -	- - - - -	- - - - -	- d - - - - - - -
5	-	- - -	- - -	- - - - -	- - - - -	- - - - - - - - -
6	-	- - -	- - -	- - - C -	- - - - -	- - - - - - - - -
7	-	- -		- - - -	- - - - -	- - - - - - - - -
8	-	- -		- - - d	- - - - -	- ● - - - - - - -
9	-				- - - -	- - - - - - -
10	-				- - - -	- ● - - - - -

Sec.	3a	3b	4	
Bldg.	304	305	306	312
	1 2 3 4 5	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7	1 2 3
Cell				
1	(C) - - - -	(C) - - - - - - - - - - -	(C) - - - - - -	(●)(●)(-)
2	- C - - (C)	- - - - - - - - - - - (-)	- - - - - -	● f -
3	- - - - -	- - - - - - - - - - - -	- - - - - - -	● ● -
4	- d - - -	- - - - - - - - - - - -	- - C - - -	● f -
5	- - - - -	- - - - - - - - - - - -	- - - - - -	● ● -
6	- - - - -	- - - - - - - - - - - -	- - - - - -	● f -
7	- - - - -	- - - - - - - - - - - -	- - - - - -	● ● -
8	- - - - -	- - - - - - - - - - - -	- - - - - b -	● f -
9	- - - - -	- - - - - - - - - - - -	- - - - - -	● ● -
10	- - - - -	- - - - - - - - - - - -	- - - - - -	● f -
11			- - - - C - -	● ● -
12			- - - - - d -	● f -
13			- - - - - -	● ● -
14			d - - - - -	● f -
15				● f -
16				● f -
17				● f -
18				● ● -
19				● ● -
20				● ● -
21				● ● -
22				● ● -

Classification changed to: UNCLASSIFIED (level and category)

ADC or AUD signature (first reviewer) Date: 9/14/95

AUC signature (final reviewer) Date: 14 Sept 95

This document has been approved for release to the public by: [signature] 10/6/95

KZ 5421 PTA 2 A

Legend:

- \- C-616 Cascade
- a C-616 Isolated
- b C-216
- C G-74 or evacuated
- d Down for repairs
- ● Vacuum testing or instrument checking
- () Intersectional cell
- * R-pump test loop
- g Total reflux
- f Mechanical runs complete

UNCLASSIFIED

PROCESS (Cont'd)

Status of Process Buildings (Cont'd)

Cell Summary	Case I	Case II	Case III	Case IV	Case V	312
Cells in cascade - C-616	67	96	49	164	91	21
Cells on inverse recycle - C-616	0	0	1	0	0	0
Cells on G-74	0	0	0	0	1	0
Cells evacuated	0	0	1	1	1	0
Cells on C-216	0	1	0	0	1	0
Cells purging C-216 for C-616	0	0	0	0	0	0
Cells down for repairs	0	1	1	1	2	0
Cells in which vacuum testing is complete	0	2	0	0	0	32
Cells being vacuum tested	0	1	0	0	0	0
Cells in which mechanical runs are complete	0	0	0	0	0	10
Cells under construction	0	0	0	0	0	0

The average stream efficiency as of 8 a.m. September 4 was 97.8%. The improvement in the stream efficiency for the week was due mainly to a drop in seal changes. The seal changes in the 306 Section, which was accountable for a large percentage of the seal failures, have dropped to an average of two per day.

There was a general improvement throughout the cascade in operating conditions, with no serious interruptions of any kind.

POWER

The average electrical demand of K-25 Area for the week increased slightly over the previous week's demand and amounted to 209,700 kw, of which TVA supplied 24.2% over the 154-kv ties.

All three boilers were in continuous operation and supplied steam to S-50 at an average rate of 642,000 lb/hr in addition to the steam supplied for electric generation.

LABORATORY

The second fission counter was delivered on September 1. It was constructed in about half the time required for the first model, but with some relaxation in allowable tolerances in machine work and assembly. The two-gram source for this counter was unusable as received because of the presence of an excessive layer of solder on the outside of the container. After due consideration and consultation with experts an attempt was made to remove the solder by hand at the laboratory rather than wait a month until the manufacturer could repair it. This has been successfully accomplished.

A satisfactory method for purification of samples of Tennessee Eastman product has been worked out. The final product is pure as shown both by spectrographic examination and counting measurements.

The field mass spectrometer in 311-1 is now operating on a 24-hour basis. Analyses are made every half hour. A very pleasing development has been the gradual subsidence of the 331 peak which falls between the two isotope peaks for TF_5^+, and tends to destroy the resolution. Evidence now is that this peak is not due to $S1F_5$, but to a hydrolysis product of TF_6.

LABORATORY (Cont'd)

The cadmium plate thickness of the sprayed cold traps was again found to be too low. Specifications call for a minimum of 16 mils, while the two traps checked had only 8 - 15 mils, with the average around 12 mils.

The routine comparison of fission counting and mass spectrometer analyses yielded the following results last week:

Fission Counting	Mass Spectrometers
28.55 ± .14	28.95 ± .08
29.34 ± .16	29.56 ± .13

The precision indicated is for 95% certainty.

INDUSTRIAL RELATIONS

There were 587 hires and 583 terminations during the week, increasing the number of employees on the payroll from 11,361 to 11,365.

H. D. Kinsey
General Superintendent

LOW PRIORITY

ChemRisk/Shonka Research Associates, Inc., Document Request Form

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(This section to be completed by subcontractor requesting document)

J Lamb / 1034A

Requestor / Document Center (is requested to provide the following document)

Date of request 8/18/95 Expected receipt of document 10/20/95

Document number K2-5422 Part A Date of document ~~8/18/95~~ 9-9-45

Title and author (if document is unnumbered)

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Date request received _____

Date submitted to ADC _____

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(This section to be completed by HSA Coordinator)

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Date document received _____

Signature _____

UNCLASSIFIED

[redacted]

... pages
No. 2 of 8 copies, Series A

Carbide and Carbon Chemicals Corporation
Oak Ridge, Tennessee — Plant WCX

PLANT RECORDS DEPT. CENTRAL FILES

B-3194

Summary - Part A

PROCESS

Status of Process Buildings as of 8 a.m. September 10, 1945:

Sec.	-3	-2			-1			1					2a					2b									
Bldg.	311	310			309			301					302					303									
	1	3	2	1	3	2	1	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10
Cell																											
1	(-)	-	-	-		-	e	-	-	-	-	-	(C)	-	-	-	-	(C)	-	-	-	-	-	-	-	-	-
2	-	-	-	(C)		-	-	-	-	-	-	(C)	-	-	-	-	(C)	-	d	-	-	-	-	-	-	-	(-)
3	-	-	-	-	(C)	-	-	-	-	-	-	-	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	d	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-	-	-	-	d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-	-	d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-					-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-					-	-	-	-		-	-	-	-	-	-	e	-	-	-	-	-	-	-	-
9	-													-	-	-	-	-	-	-	-	-	-	-	-	-	-
10	-													-	-	-	-	-	e	-	-	-	-	-			

Sec.	3a					3b												4									
Bldg.	304					305												306							312		
	1	2	3	4	5	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	1	2	3
Cell																											
1	(C)	-	-	-	-	(C)	-	-	-	-	-	-	-	-	-	-	-	(C)	-	-	-	-	-	-	(e)	(e)	(-)
2	-	-	-	-	(C)	-	-	-	-	-	-	-	-	-	-	-	(C)	-	-	-	-	-	-	-	e	f	-
3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	d	-	e	e	-
4	-	C	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	a	-	b	-	-	-	-	e	f	-
5	-	-	-	-	-	-	-	d	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	e	e	-
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	e	f	-
7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	C	-	-	-	-	-	e	e	-
8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	e	f	-
9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	e	e	-
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	e	f	-
11																		-	-	-	-	e	-	-	e	d	-
12																		-	-	-	-	-	-	-	e	f	-
13																		-	-	-	-	-	-	-	e	d	-
14																		-	-	-	-	-	-	-	e	f	-
15																									e	d	-
16																									e	f	-
17																									e	d	-
18																									e	f	-
19																									e	d	-
20																									e	f	-
21																									e	f	-
22																									e	d	-

KZ 5422 PTA 2 A

Classification changed to: UNCLASSIFIED
(level and category)
Thomas W. Sellers 9/14/95
ADC or ADD signature (first reviewer) Date
[signature] 14 Sep 95
ADD signature (final reviewer) Date

Legend:

- \- C-616 cascade
- a C-616 isolated
- b C-216
- C G-74 or evacuated
- d Down for repairs
- e Vacuum testing or instrument checking
- () Intersectional cell
- * R-pump test loop
- g Total reflux
- f Mechanical runs complete

UNCLASSIFIED

This document has been approved for release to the public by: [signature] 10/6/95
Technical Information Officer Date
Oak Ridge K-25 Site

[redacted]

[redacted]

PROCESS (Cont'd)

Status of Process Buildings (Cont'd)

Cell Summary	Case I	Case II	Case III	Case IV	Case V	312
Cells in cascade - C-616	66	97	49	164	91	21
Cells on inverse recycle - C-616	0	0	0	0	1	0
Cells evacuated	1	0	0	1	1	0
Cells on C-216	0	0	0	0	1	0
Cells down for repairs	0	2	2	1	1	6
Cells in which vacuum testing is complete	0	0	0	0	0	25
Cells being vacuum tested	0	2	1	0	1	0
Cells in which mechanical runs are complete	0	0	0	0	0	11

The stream efficiency at the end of the week was 97.1%.

Building 312-3 has been operating as a purge unit for the entire cascade since September 3.

With the exception of minor mechanical difficulties the system has been functioning very satisfactorily and has been able to handle all of the light gases with a considerable margin, at the same time reducing the 616 concentration at the top to around 0.0003 mol %. This means that only about .02 pounds 616 per day pass out of the top of the cascade into the carbon traps.

A converter was removed from Stage 6, Cell 4 in 306-3 because it was plugged about 85%. No adequate explanation was available to account for the plugging. Stage 6, Cell 7 of 306-2 has a very high leak flow, indicating a possible rupture of the tubes. These converters will be removed for examination.

The remainder of the cascade operated very satisfactorily, with production being slightly more than normal.

POWER

The electrical demand of K-25 Area for the week averaged 207,990 kw, which was 0.8% below the previous week's average. TVA supplied 23.5% of the energy required over the 154-kv ties.

All three boilers were in continuous service during the week. The steam demand of S-50 averaged 530,000 lb/hr.

LABORATORY

The portable field unit for determining C-216 in nitrogen by thermal conductivity has been completed. The instrument has been calibrated and is ready for field runs. When it is operating properly successive measurements may be made in a few minutes.

The nickel Raschig rings were exposed to flowing liquid 616 for 66.3 days at 65°C. During this time 18.3 tons of 616 passed over the rings. The rings were in exceptionally good condition, with little evidence of corrosion. The corrosion on anodized aluminum fittings exposed to static 616 vapor at 7.5 pounds psia for 337 hours at 60°C was negligible.

LABORATORY (Cont'd)

The routine comparison of fission counting and mass spectrometer analyses yielded the following results last week:

Fission Counting	Mass Spectrometers
28.72 ± .15	28.75 ± .05
29.19 ± .14	29.39 ± .05

A readjustment of the value of the mass spectrometer standard from 35.63 to 35.13 this week has brought the results by the two methods into reasonably good agreement.

The limit of error of a single measurement of duplicate inventory samples in Laboratory B dropped to 1.5%. The average value of standard samples used for checking gravimetric and electroplating procedures came down to 1.0016, with a limit of error of a single sample of 1.1%. A series of twelve films was made up, using equal aliquots from one solution, for the Tennessee Eastman laboratories to use in checking the accounting accuracy. All these films agreed in counting rate within ± 0.15%.

Experts from the Columbia University Radiation Laboratory are here to test the gamma ray transmission measurements of carbon traps under field conditions. Improvements in design and maintenance of the equipment are expected to result from their assistance. A device for filtering gases and counting radioactive contamination thus collected has been put in operation.

More samples of process gas containing the unknown contaminant were received for complete spectral analysis on the line recorders. The movement of this material in the plant has been closely followed. The cracking patterns of MFL, Aroclor, and 2144 will be run for comparison.

INDUSTRIAL RELATIONS

There were 402 hires and 335 terminations during the week, increasing the number of employees on the payroll from 11,513 to 11,528.

H. D. Kinsey
General Superintendent

LOW PRIORITY

ChemRisk/Shonka Research Associates, Inc., Document Request Form

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(This section to be completed by subcontractor requesting document)

J Lamb / 1034A

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Date submitted to ChemRisk/Shonka and DOE 10-17-95

(This section to be completed by ChemRisk/Shonka Research Associates, Inc.)

Date document received

Signature

Carbide and Carbon Chemicals Corporation
Oak Ridge, Tennessee — Plant WCX

Summary - Part A

PROCESS

Status of Process Buildings as of 8 a.m. September 17, 1945:

Sec.	-3	-2	-1	1	2a	2b
Bldg.	311	310	309	301	302	303
	1	3 2 1	3 2 1	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5 6 7 8 9 10
Cell						
1	(-)	- - -	- -	- - - - -	(c) - - - -	(c) - - - - - - - - -
2	-	d - (c)	- -	- - - - (c)	- - - - (c)	- d - - - - - - d -
3	-	- - -	(c) - -	- - - - d	- - - - -	- - - - - - - - -
4	-	- - -	- - -	- - - - -	- - - - -	- d - - - - - - -
5	-	- - -	- - -	- - - - -	- - - - -	- - - - - - - - -
6	-	- - -	- - -	- - - - -	- - - - -	- - - - - - - - -
7	-	- -		- - - -	- - - - -	- - - - - - - - -
8	-	- -	- - -	- - - -	- - - - -	- e - - - - - - -
9	-				- - - -	- - - - - - - - -
10	-				- - - -	- e - - - - - - -

Sec.	3a	3b	4	312
Bldg.	304	305	306	
	1 2 3 4 5	1 2 3 4 5 6 7 8 9 10 11 12	1 2 3 4 5 6 7	1 2 3
Cell				
1	(c) - - - -	(c) c - - - - - - - - - -	(c) - - - - - -	(e)(f)(-)
2	- - - - (c)	- - - - - - - - - - - (c)	- - - - - -	e c -
3	c - - - -	- - - - - - - - - - - -	- - - - - -	e c -
4	- - - - -	- - - - - - - - - - - -	- - - - - -	• c -
5	- - - - -	- - - - - - - - - - - -	- - - - - -	• c -
6	- - - - -	- - - - - - - - - - - -	- - - - - -	• c -
7	- - - - -	- - - - - - - - - - - -	- - - - - -	• c -
8	- - - - -	- - - - - - - - - - - -	- - - - - -	• c -
9	- - - - -	- - - - - - - - - - - -	- - - - - -	• c -
10	- - - - -	- - - - - - - - - - - -	- - - - - -	• c -
11			- - - - - -	• c -
12			- - - - - -	• c -
13			- - - - - a	• c -
14			- - - - - -	• c -
15				• c -
16				• c -
17				• d -
18				• d d
19				• c d
20				• c -
21				• d -
22				• c -

Legend:

- \- C-616 cascade
- a C-616 isolated
- b C-216
- c C-74 or evacuated
- d Down for repairs
- e Instrument checking or vacuum testing
- ( ) Intersectional cell
- * R-pump test loop
- f Mechanical runs complete

PROCESS (Cont'd)

Status of Process Buildings (Cont'd)

Cell Summary	Case I	Case II	Case III	Case IV	Case V	31
Cells in cascade - C-616	66	96	51	164	95	1
Cells evacuated	0	0	0	2	0	
Cells down for repairs	1	3	1	0	0	
Cells on inverse recycle - C-616	0	0	0	0	1	
Cells on C-74	0	0	0	0	0	1
Cells in which vacuum testing is complete	0	2	0	0	0	2

A rather serious interruption to cascade operation occurred at 8:40 p.m. September 16 when there was a power failure in all the 303 buildings. The buildings above and below the 303 buildings were put on separate cascades while the 303 buildings were being restored to operation. By 9:45 p.m. the power had been restored, and by 3:05 a.m. September 17 all 303 buildings were in operation. At 6:15 a.m. September 17 the separate cascades were connected into one system.

While only one cell was not returned to operation immediately, about ninety pump seals developed high leakage as a result of the failure. The affected cells will be taken off stream and the seals replaced as rapidly as possible.

The west loop of Section 600 was shut down at 6:30 a.m. September 16 as a result of the failure of the seal on the Elliott pump. As the east loop was already shut down it was necessary to use two mobile units for the removal of waste material.

Up to the present time there has been no apparent effect on production as a result of these interruptions. However, it is possible that there may be a lag of more than one week before any effect is noticed.

POWER

The electrical demand of K-25 Area for the week averaged 198,950 kw, which was 4.3% less than the previous week's average. TVA supplied 13.6% of the Area's total energy requirements. Most of the drop in electrical demand was due to the drop in demand by S-50 where operations were stopped on September 10. This stoppage was also reflected in station auxiliary power, which decreased from 8.7% to 6.8% of gross generation.

LABORATORY

Further studies on the source of the contaminant which appeared in the plant recently make it seem unlikely that Aroclor was responsible. The reaction of 216 on Aroclor produces a gum rather than a liquid, and a mixture of Aroclor and 616 does not give a mass spectrum similar to that of the unknown. A mixture of HFL and 616 heated to about 200°C gives a mass spectrum closely resembling that of the unknown. This appears to be a likely explanation for the origin of the contaminant.

Experimental gamma ray scanning measurements have been continued in collaboration with the Columbia University group. Measurements by the routine laboratory staff, when made under specified conditions, have given results in good agreement with the weight measurements.

LABORATORY (Cont'd)

A test of the precision of line recorder measurements on nitrogen and oxygen in the plant stream has been made by comparing pairs of samples taken at the same point 30 minutes apart. Typical nitrogen analyses have averaged about 93 ± 2.0 mol %. Oxygen analyses have run about 5 ± 0.6 mol %. However, there have been significant deviations in the precision from week to week.

The routine comparison of fission counting and mass spectrometer analyses yielded the following results last week:

Fission Counting	Mass Spectrometers
28.66 ± .12	28.68 ± .10
29.33 ± .15	29.33 ± .10

INDUSTRIAL RELATIONS

There were 325 hires and 506 terminations during the past week, making the total number of employees on the payroll 11,367.

H. D. Kinsey
General Superintendent